First Hit Fwd Refs

L9: Entry 4 of 35 File: USPT Apr 23, 2002

DOCUMENT-IDENTIFIER: US 6375963 B1
TITLE: Bioadhesive hot-melt extruded film for topical and mucosal adhesion applications and drug delivery and process for preparation thereof

Brief Summary Text (3):
Thin films for transdermal/transmucosal (TD/TM) drug delivery devices and wound care applications are frequently produced via film casting utilizing organic or aqueous solvents. Aitken-Nichol, et al. (Pharm. Res., 13:804-808 (1996); the entire disclosure of which is hereby incorporated by reference) noted numerous disadvantages accompanying these techniques including long processing times, high costs, and environmental concern. Gutierrez-Rocca, et al. (DDIP., 19:315-332 (1993); the entire disclosure of which is hereby incorporated by reference) demonstrated that the attainment of stable mechanical properties might be as long as two months, which ultimately affects the rate of release of drugs incorporated into the films. In addition, moisture permeability and moisture uptake of TD/TM films may affect sustained drug release as well as adhesion of the films to the epidermis or mucosa. Hjartstam, et al. reported that alterations in cellulose film structure influenced both drug transport and the mechanical properties of the film. Also, levels and types of plasticizers, temperature, and relative humidity have been demonstrated to affect the physical-mechanical properties and the dissolution rate of drugs through films formed from aqueous dispersions.

Brief Summary Text (5):
U.S. Pat. No. RE 33,093 to Schiraldi et al. (the entire disclosure of which is hereby incorporated by reference) describes a bioadhesive hot-melt extruded film for intra-oral drug delivery and the processing thereof. The film of Schiraldi et al. comprises essentially a bioadhesive layer consisting of 40-95% by weight of a hydroxypropylcellulose (HPC), 5-60% of a homopolymer of ethylene oxide (PEO), 0-10% of a water-insoluble polymer, a medicament and 2-10% of a plasticizer. The film was made by a hot-melt extrusion process. Mooney, et al. (U.S. Pat. No. 6,072,100; the entire disclosure of which is hereby incorporated by reference) also describes a medicament delivery system consisting of HPC, PEO, a water-soluble polymer derived from acrylic acid, a medicament and a plasticizer. In this system, the compositions were intended for topical or transdermal delivery only. Note, however, that both of these references disclose that a plasticizer is needed for the production of a hot-melt extruded film.

Brief Summary Text (10):
The present invention provides a bioadhesive extruded film that is an effective, feasible, and convenient topical or intra-cavity drug delivery system for applying and delivering controlled dosages of therapeutic agents onto the skin or into the body cavities. This invention may also be extended to controlled drug delivery in skin care or cosmetics, gynecological, vaginal, cranial, abdominal, otic, uterine, nasal, sinus, rectal, buccal, oral, ophthalmlc, and wound care applications and to adhesive applications, such as for use as a denture adhesive. The present hot-melt extrusion process generally provides shorter and more efficient processing times to a final product, environmental advantages due to elimination of solvents in processing, better stability due to the elimination of a plasticizer, and increased efficiency of drug delivery to the patient.

Detailed Description Text (25):

The film of the present invention comprises at least one bioadhesive extruded film layer. It may also further comprise a therapeutic agent reservoir layer and/or an outer protective barrier membrane layer. FIG. 1 depicts a multi-layered film (1) according to the invention comprising an outer protective barrier or backing layer (2), a reservoir or drug-matrix layer (3) and an adhesive layer (4). If for medicinal purposes, the therapeutic agent may be incorporated into any or all of the layers. In some cases the single or multi-layer system may require a suitable adhesive layer (silicones, etc).

Detailed Description Text (48):
This example describes a monolayer topical wound care patch adhesive film (10-15 mils thick) and method of preparation therefor. This film was made according to the process of Example 1 except that no tartaric acid was used. The film was cut into various bandage sizes for the appropriate application. The film may contain an adhesive layer overlaying and extending 1/8 to 2 inches beyond the patch. It is extremely useful in wound exudate absorption.

Detailed Description Text (50):
The following example is another illustration of a single layer topical wound care patch that may be cut into various bandage sizes for the appropriate application. Note that it has a higher percent of super-disintegrant (absorbent). It is useful when more exudate absorption is needed. This film was made according to the process of Example 1.

Detailed Description Text (54):
The following formulation for an extruded film (7 mils thick) is useful as a topical, cosmetic (face or hand) mask or patch for wrinkles and aging spots. This film is made according to the process of Example 1.

Detailed Description Text (56):
The following is a topical anti-inflammatory patch for localized rashes, insect bites, etc. The film may be cut and shaped into appropriately sized sections as needed. A protective backing may or may not be utilized. This film was made according to the process of Example 1.